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ORIGINAL ARTICLE

Prescription Pain Reliever Misuse Among Transgender and Gender Diverse Adults

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Abstract

Purpose: Little is known about the prevalence and risks associated with transgender and gender diverse (TGD) persons' misuse of prescription pain relievers (PPRs). This study explores the relationship between PPR misuse and various sociodemographic identities and experiences of discrimination in health care among TGD adults.

Methods: TGD participants ($n = 595$) were recruited in 2018 to participate in a cross-sectional statewide trans health survey through convenience sampling. Chi-square tests of independence and logistic regressions were conducted to explore associations between sociodemographics and experiences of discrimination among persons who had ever misused PPRs, or who had misused PPRs in the past year.

Results: Sociodemographics such as gender identity (odds ratio [OR] = 0.44, $p = 0.01$), race/ethnicity (OR = 0.14, $p < 0.001$), and sexual orientation influence TGD individuals likeliness of misusing PPRs (OR = 0.40, $p < 0.001$). Notably, those who were ever diagnosed with anxiety had a higher likeliness of having lifetime PPR misuse compared with those who were never diagnosed (OR = 2.05, $p = 0.05$), and those reporting past-year discrimination within the mental health care setting because of their gender identity were more than twice as likely to report past-year misuse than those who reported not experiencing it (OR = 2.43, $p = 0.004$).

Conclusion: Certain subpopulations of TGD individuals may be at elevated risk of PPR misuse. It is imperative to acknowledge the impact of multimarginalized identities as well as differences across various identities and experiences within the TGD community while working to address non-PPR misuse.

Keywords: nonbinary; prescription pain reliever; substance misuse; transgender

Introduction

Prescription pain reliever (PPR) misuse continues to be a prevalent and complex issue across the United States.[1] There is a lack of data available on the prevalence and risk factors associated with PPR misuse among transgender and gender diverse (TGD) individuals. PPR misuse is defined as the use of prescription drugs without a prescription from a medical provider or using a previously prescribed pain reliever for nonprescribed purposes.[1] The term misuse is being used in this study rather than disorder or abuse to destigmatize substance use,[2] and to steer away from the pathologizing substance use that does not address root causes.

Extant research suggests that among adolescent transgender girls, 11.8% have had lifetime use of PPRs[3] and 26.5% of transgender adults have had lifetime PPR misuse with no differences between transgender men and transgender women.[4] Further, depression, anxiety, and gender identity-based discrimination are significantly associated with PPR misuse among transgender adults aligning with research in the general population, which has found a connection between depressive symptoms and substance misuse, including PPR misuse.[4–10]

Having multiple-marginalized identities may be associated with varying levels of substance misuse among TGD individuals.[11] Transgender adolescent girls who

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identify as lesbian, gay, or bisexual (LGB) were more likely than their heterosexual peers to have lifetime PPR misuse.[3] Among transmasculine adults, those who identified as queer experienced higher levels of health care-related stigma and subsequent substance misuse to cope compared with their heterosexual peers.[12] Yet, White transgender girls were more likely than Black transgender girls to misuse PPR in their lifetime.[3]

Experiences of discrimination such as gender identity-related bullying were found to be associated with increased substance misuse among TGD youth.[6] In addition, TGD youth are at over five times higher risk of PPR misuse than their cisgender peers,[13] which may result from their experiences of gender identity-based discrimination in school. This aligns with Meyer's Minority Stress Model used to denote how bias, stigma, and discrimination can negatively impact mental health outcomes.[14] The model suggests that individuals may rely on substances to cope with the cumulative impact of minority stress.[14,15] These experiences help contextualize heightened rates of depression and substance use among TGD individuals when compared with the general population.[16–19]

Little is known about how PPR misuse varies by sociodemographics within the TGD community such as age, gender identity, urbanicity, race, and sexual orientation. This study aims to explore how lifetime PPR misuse may vary among TGD adults based on various sociodemographic identities and mental health diagnoses. In addition, it examines whether sociodemographic identities, risk factors such as mental health outcomes, and experiences of gender identity discrimination are associated with PPR misuse in the past year.

Methods

Study design

This incentivized, voluntary, and cross-sectional study consists of analysis of data from the 2018 Michigan Transgender Health Survey (MTHS). Eligible participants in MTHS were ≥18 years of age, lived in the state of Michigan, and identified as transgender, trans, nonbinary, genderqueer, agender, genderfluid, two-spirit, transsexual, or another non-cisgender identity. Participants also had to provide voluntary consent to complete the survey. MTHS was approved as exempt by the University of Michigan Institutional Review Board; further IRB approval was not sought for this secondary analysis because no identifiable information was originally collected.

Variables

This analysis included two dependent variables. One dependent variable addresses lifetime PPR misuse. This variable came from the question, "This next set of questions is about prescription pain medications, sometimes called opioids. Examples of these medications include pain relievers such as Vicodin, oxycodone, hydrocodone, Percocet, tramadol and codeine-based products. Have you ever, even once, used any prescription pain reliever in any way a provider did not direct you to use it?" with dichotomous response options of "Yes" or "No."

The second variable addresses past-year PPR misuse. The question was phrased on the survey instrument as "In the past year, how many times did you use any prescription pain reliever in any way a medical provider did not direct you to use it?" The response options were "0 times," "1 or 2 times," "3 to 9 times," "More than 10 times," and "Yes, every day." This variable was recoded into a dichotomous variable with "0 times" coded as "No," and combining the values of "1 or 2 times," "3 to 9 times," "More than 10 times," and "Yes, everyday" to a "Yes" value.

Gender identity was assessed using the question "What is the primary way you identify your gender?" with eight response values consisting of "Female/Woman," "Male/Man," "Trans woman/Transfeminine," "Trans man/Transmasculine," "Nonbinary/Gender Queer/Agender/Gender Fucker," "Transgender/Trans," "Multiple Genders," and "Additional Genders." For this study, this variable was recoded by combining "Female" and "Transfeminine" into one value named "Female/Transfeminine"; combining "Male" and "Transmasculine" into one value called "Male/Transmasculine"; keeping "Nonbinary" as its own value; and combining "Transgender/trans," "Multiple genders," and "Additional genders" into one value called "Additional Genders" due to low responses for each value.

Sexual orientation was queried through the question "What is the primary way you identify your sexual orientation?" This variable was recoded by combining gay, lesbian, and homosexual into "Traditional Monosexual, Not Straight" value to represent traditional single gender attraction identities and changed the label straight to "Traditional Monosexual, Straight"; combining "Bisexual," "Pansexual/Omnisexual," "Queer," "Multiple Orientations," and "Additional Orientations" into value "Expansive, not straight," representing a multigender attraction or politicized sexual identity.

Race was assessed using the question "What is the primary way you identify your racial and/or ethnic identity?" There were nine values available, and it was recoded into five values by combining "Asian/Asian American/Pacific Islander," "Native/Indigenous/American Indian," "Middle Eastern," "Participant Type-Other," and "Romani" into one value called "Additional Races" due to low responses for each value.

Residence was queried through the question "Would you consider where you live to be," with values ranging from "Urban," "Suburban," "Small City," "Villages, hamlets, towns, cities under 10,0000 people," or "Frontier." Due to low response outside of urban and suburban areas, the values of "Urban" and "Suburban" were combined into a new value labeled "Urban," while "Small City," "Villages," and "Frontier" were combined into one value labeled "Nonurban."

Whether a study participant had ever been diagnosed with depression and anxiety was queried through questions "In the past 12 months, has a doctor or health care provider (including a counselor or therapist) told you that you are experiencing depression or have a depressive disorder?" and The same question was used to assess "anxiety or have an anxiety disorder?" The survey instrument provided four response values for both questions: "Yes," "No," "No, but I have been told this before," and "No—I did not receive any health care in the past 12 months."

These two variables were recoded by combining the values for "Yes" and "No, but I have been told this before" into a "Yes" value. "No" and "No—I did not receive any health care in the past 12 months" were combined into a universal "No" value for ever having been diagnosed with depression or anxiety. Experiencing gender identity discrimination in general health care and mental health care was queried through the questions "In the past 12 months, did you experience discrimination based on your gender identity when accessing GENERAL HEALTH CARE?" and the same question for "MENTAL HEALTH CARE?" The original values were "Yes," "No," and "I did not try to access mental health care." These variables were recoded into a dichotomous variable by combining "No" and "I did not try to access general/mental health care" into a "No" value.

Statistical analyses

Analyses for this study were conducted using SPSS, version 26 (IBM Corp., Armonk, NY). The original research team that launched MTHS cleaned that dataset by removing exclusionary/ineligibility criteria, duplicate responses, and illogical responses. The final cleaned dataset provided to our research team for this study included 659 responses. To be included in the analysis for this study, participants had to respond to at least one of the dependent variable questions ($n = 595$).

These data were assessed for missingness, and all variables had $< 10\%$ missing data.[20] *T*-test and chi-square tests of independence were conducted to explore associations between sociodemographics and predictor variables with the dependent variables. Three logistic regression models were conducted: first, Model 1 explored lifetime PPR misuse controlling for sociodemographics, depression, and anxiety. Second, Model 2 explored past-year PPR misuse controlling for sociodemographics, depression, and anxiety. Finally, Model 3 explored past-year misuse of PPRs, controlling for sociodemographics, depression, anxiety, and discrimination.

Results

Descriptive characteristics and associations in Table 1 represent this study's sample ($n = 595$), and stratified by lifetime and past-year PPR misuse. The sample had a mean age of 28.59 (standard deviation: 10.24). With respect to gender identity, 28.7% were male/transmasculine, 19.8% were female/transfeminine, 26.6% were nonbinary, and 21.8% were additional gender. The sample was primarily White (76.6%), expansive—not straight (58.5%), and residentially urban (69%). Regarding mental health, 72.6% had ever been diagnosed with depression and 73.9% were ever diagnosed with anxiety. Over a quarter of participants (27.2%) have reported gender identity-based discrimination in general health care settings, and 21.2% reported discrimination in mental health care settings. A third of the sample (33.3%) have misused PPRs in their lifetime and 24.5% have in the past year.

Logistic regressions

The three regression models are shown in Table 2. Model 1 found that participants with additional genders were less likely to report lifetime misuse compared with male/transmasculine participants (odds ratio [OR] = 0.46, $p = 0.005$). Female/transfeminine and nonbinary participants did not differ significantly from male/transmasculine participants. Traditional monosexual, not straight participants were less likely to have lifetime misuse compared with expansive, not straight participants (OR = 0.50, $p = 0.003$).

Table 1. Descriptives and Distribution by Lifetime Misuse and Past-Year Misuse (n =595)

	Total sample		Lifetime			Past-year misuse		
Variable	*n*	%	*n*	%	Sig	*n*	%	Sig
Demographics								
Age (M/SD)	28.6	10.2	29.51	9.54	0.123	28.22	8.73	0.574
Gender identity								
Male/transmasculine	171	28.7	43	22.6	**0.008**	25	18.4	**<0.001**
Female/transfeminine	118	19.8	39	20.5		27	19.9	
Nonbinary	158	26.6	51	26.8		37	27.2	
Additional genders	130	21.8	57	30		47	34.6	
Missing	18	3.00						
Sexual orientation								
Expansive (not straight)	348	58.5	105	56.1	**0.005**	66	50	**<0.001**
Monosexual (not straight)	119	20.0	55	29.4		50	37.9	
Monosexual (straight)	68	11.4	19	10.2		11	8.3	
Asexual/demisexual	34	5.7	8	4.3		5	3.8	
Missing	26	4.4						
Race								
White	456	76.6	145	79.3	**<0.001**	100	75.8	**0.001**
Black/African American	38	6.4	7	3.8		10	7.6	
Latinx/Chicanx/Hispanic	24	4.0	17	9.2		14	10.6	
Multiracial/biracial	30	5.0	10	5.4		5	3.8	
Additional races	21	3.5	4	2.2		3	2.3	
Missing	26	4.4						
Residence								
Urban	455	69	144	72.7	0.188	115	78.8	**0.004**
Nonurban	204	31	54	27.3		31	21.2	
Predictors								
Ever diagnosed with depression								
Yes	432	72.6	155	35.9	**0.022**	109	25.2	0.55
No	162	27.2	42	25.9		37	22.8	
Missing	1	0.2						
Ever diagnosed with anxiety								
Yes	440	73.9	146	33.2	0.988	106	24.1	0.640
No	154	25.9	51	33.1		40	26	
Missing	1	0.2						
Gender identity discrimination in general health care in the past year								
Yes	162	27.2	70	35.5	**0.001**	65	44.5	**<0.001**
No	431	72.4	127	64.5		81	55.5	
Missing	2	0.3						
Gender identity discrimination in mental health care in the past year								
Yes	126	21.2	62	31.5	**<0.001**	56	38.4	**<0.001**
No	468	78.7	135	68.5		90	61.6	
Missing	1	0.2						
Outcomes								
Prescription pain reliever misuse in lifetime								
Yes	198	33.3						
No	397	66.7						
Prescription pain reliever misuse in the past year								
Yes	146	24.5						
No	449	75.5						

Boldface text denotes statistically significant results.
M, mean; SD, standard deviation.

Compared with White participants, Black/African American participants were more likely (OR = 2.66, $p = 0.044$) to report lifetime misuse, while Latinx participants were less likely (OR = 0.14, $p < 0.001$) to report lifetime misuse. Those who have ever been diagnosed with depression are at a lower likelihood of having lifetime PPR misuse compared with those who were never diagnosed with depression (OR = 0.32, $p = 0.001$). Age, urbanicity, and diagnosis of an anxiety disorder were not found to have a statistically significant association with lifetime misuse when controlling for other variables.

Model 2 found that compared with male/transmasculine participants, additional gender participants were less likely (OR = 0.33, $p = 0.001$) to report past-year PPR misuse. Monosexual, not straight participants were less likely (OR = 0.32, $p < 0.001$) to have past-year misuse compared with expansive, not

Table 2. Logistic Regression of Demographics and Risks by Prescription Pain Reliever Misuse

	Model 1: lifetime misuse by sociodemographics			Model 2: past-year misuse by sociodemographics			Model 3: past-year misuse by sociodemographics and discrimination		
Variables	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***P***	**OR**	**95% CI**	***p***
Age	0.99	0.97–1.01	0.15	1.00	0.98–1.02	0.90	1.00	0.98–1.02	0.89
Gender identity (male/transmasculine)									
Female/transfeminine	0.91	0.50–1.63	0.74	0.70	0.35–1.34	0.32	0.85	0.42–1.70	0.65
Nonbinary	0.74	0.43–1.25	0.26	0.54	0.29–1.01	0.052	0.63	0.33–1.19	0.16
Additional genders	**0.46**	**0.27–0.80**	**0.005**	**0.33**	**0.18–0.62**	**0.001**	**0.44**	**0.23–0.83**	**0.01**
Sexual orientation (expansive [not straight])									
Monosexual (not straight)	**0.50**	**0.31–0.79**	**0.003**	**0.32**	**0.20–0.52**	**<0.001**	**0.40**	**0.24–0.67**	**<0.001**
Monosexual (straight)	0.83	0.44–1.58	0.57	0.78	0.36–1.67	0.53	0.69	0.32–1.50	0.35
Asexual/demisexual	1.60	0.65–3.92	0.31	1.19	0.43–3.33	0.74	1.08	0.38–3.07	0.88
Race (White)									
Black/African American	**2.66**	**1.03–6.89**	**0.044**	0.98	0.42–2.30	0.96	1.05	0.44–2.52	0.92
Latinx/Chicanx/Hispanic	**0.14**	**0.05–0.38**	**<0.001**	**0.17**	**0.07–0.43**	**<0.001**	**0.14**	**0.06–0.35**	**<0.001**
Multiracial/biracial	0.93	0.41–2.11	0.85	1.47	0.52–4.17	0.46	1.25	0.43–3.63	0.68
Additional races	2.20	0.70–6.92	0.18	1.92	0.52–7.08	0.33	1.95	0.51–7.39	0.33
Residence (urban/suburban)									
Rural/small town/frontier	1.09	0.72–1.65	0.70	1.49	0.91–2.44	0.11	1.55	0.45–2.56	0.09
Ever diagnosed with depression (no)									
Yes	**0.32**	**0.17–0.62**	**0.001**	**0.45**	**0.22–0.92**	**0.03**	0.55	0.27–1.14	0.11
Ever diagnosed with anxiety (no)									
Yes	1.85	0.98–3.48	0.59	1.81	0.89–3.70	0.10	**2.05**	**1.00–4.20**	**0.05**
Discriminated in general health care because of gender identity in the past year (no)									
Yes	—	—		—	—		1.45	0.84–2.51	0.18
Discriminated in mental health care because of gender identity in the past year (no)									
Yes	—	—		—	—		**2.43**	**1.33–4.44**	**0.004**

Boldface text denotes statistically significant results.
CI, confidence interval; OR, odds ratio.

straight participants. Latinx participants were less likely to report past-year misuse compared with White participants (OR = 0.17, $p < 0.001$). Those who ever had a depression diagnosis were less likely than those who have never been diagnosed with depression to misuse in the past year (OR = 0.45, $p = 0.03$). Age, residence, and ever being diagnosed with anxiety were not found to have statistically significant associations with past-year misuse when controlling for other variables.

Model 3 found that respondents identifying with additional genders were less likely as male/transmasculine respondents to report past-year misuse (OR = 0.44, $p = 0.01$). Monosexual, not straight participants were less likely than expansive, not straight participants to report past-year misuse (OR = 0.40, $p < 0.001$). Latinx participants were substantially less likely to report past-year misuse compared with White participants (OR = 0.14, $p < 0.001$). Those who have ever been diagnosed with anxiety were two times more likely to report past-year misuse than those who have not been diagnosed with anxiety (OR = 2.05, $p = 0.05$).

In addition, those reporting past-year discrimination within a mental health care setting were almost two and half times more likely to report past-year misuse (OR = 2.43, $p = 0.004$) than those who reported not experiencing discrimination. Age, residence, ever having received a depression diagnosis, and experiencing gender identity-based discrimination within a general health care setting during the past year were not associated with past-year misuse when controlling for other variables.

Discussion

These findings explore experiences of PPR misuse within the TGD community, filling a gap in the literature among multiple-marginalized TGD individuals. Participants in this sample were more likely to report misuse of PPRs within the past year (24.5%) compared with the general population (3.5%).[21] Yet, our results demonstrate that PPR misuse within the TGD community is not a homogeneous experience.

Collecting nuanced sociodemographic data on surveys is challenging. The MTHS provided many

opportunities to fill in identities not represented; however, this led to the authors having to aggregate many of the sociodemographic categories for quantitative analysis. Further, this study does not capture the nuance of experiences among TGD individuals experiencing chronic pain who may not have access to prescription pain reliever that is not classified as misuse in this study. While we did encounter some item nonresponse, missing data did not exceed 5% for any variable of interest, so item nonresponse bias was not a major concern.[20] Future research should aim for a larger sample size that allows for a more nuanced analysis of sociodemographic categories, as well as explore reasons why TGD individuals may be engaging in PPR misuse.

Sociodemographic characteristics such as gender identity, sexual orientation, and race may be associated with varying levels of lifetime and current risk and misuse. Due to the employment discrimination among TGD communities that impact the socioeconomic status of TGD individuals and families,[22] socioeconomic status was not included in the analysis of this study as we felt other outcome variables more accurately captured PPR risk. However, this is a possible limitation of this study that future research should explore.

In regard to race, PPR misuse has declined steadily among African Americans nationally[21]; however, this study finds that Black/African American TGD individuals are more likely to report lifetime PPR misuse compared with White TGD individuals. This may be because multiple-marginalized individuals, and in particular Black LGBTqueer+ individuals, are more likely to experience varying and extreme degrees of minority stress.[23,24] Among Latinx 18–25-year-old participants in the 2019 National Survey on Drug Use and Health (NSDUH), there was a sharp increase in PPR misuse in 2019.[21] Our findings indicate that Latinx TGD individuals were less likely to have misused PPRs in their lifetime and in the past year compared with White TGD participants.

Consistent with our past-year findings, prevalence of PPR misuse is highest among White individuals in the general population.[21,25] When developing interventions and treatment for PPR misuse, the nuanced experiences of TGD individuals must be considered as needs may look different from the general population. This includes intentionality in screening information and forms that account of gender identity, sexual orientation, and other sociodemographic information. In addition, staff and administrators working with clients and programs should have consistent and ongoing training and professional development opportunities that address TGD inclusivity from an intersectional lens.

There were several variables that were not found to be associated with either past-year misuse or lifetime misuse among this sample but have been found to be risk factors in the general population. PPR misuse has been found to be higher in nonmetropolitan areas.[26,27] Although urbanicity was associated with past-year PPR misuse in our study, there was no association between urbanicity and PPR misuse once other factors were controlled. This may suggest that other sociodemographics are more salient to PPR misuse. In addition, due to the young average age of our respondents and the overall urbanicity of participants, future studies should explore disparities among TGD individuals in rural areas.

We also found that TGD individuals were more than twice as likely to misuse PPRs in the past year if they experienced gender identity-based discrimination in a mental health care setting, which aligns with the minority stress model.[14] Further research should explore the source of the discrimination, and whether it is from a provider, other clients, or reception staff. While anxiety was significantly associated with past-year PPR misuse, depression was not. This could be due to the very high prevalence of depression in this sample but also clearly points to the role of discrimination experiences in PPR misuse risk. It is imperative for mental health and substance use practitioners to receive cultural humility and sensitivity training around working with TGD individuals.

This will provide the foundational knowledge for applying an individualized treatment approach with this community. While more research is necessary to explore the influence TGD-affirming practitioners have on TGD clients overall health wellbeing, having a primary care provider who is TGD affirming improves mental health outcomes and decreases likelihood of delayed receipt of health care.[28–30] The results of this study provide important guidance for practitioners to incorporate a culturally responsive practice as it relates to PPR misuse among TGD individuals.

The 2018 MTHS was a cross-sectional survey capturing a convenience sample of TGD individuals in Michigan. The data represent the experiences of those who responded to the survey; however, the sample aligns with some state demographics, suggesting that

this study may be representative of the Michigan TGD population.[31] While the size of the sample provides insight on PPR misuse within the TGD community that is missing from the literature, it over represents young, educated, urban, White TGD individuals. Future research at state, regional, and national levels should strive to obtain a more diverse sample that more accurately portrays the differences within various groups of TGD individuals to better understand the nuance of experiences.

Conclusion

The results of this study indicate that while the TGD community may be at higher risk of misusing PPRs compared with the general population, these experiences are nuanced, and may need different approaches for prevention and treatment. Unfortunately, most substance misuse interventions are not geared toward this population, and bias and discrimination experienced in mental health settings may be associated with PPR misuse.

Further, certain subpopulations of TGD individuals may be at an elevated risk of PPR misuse. It is imperative that social workers, substance use clinicians, therapists, and counselors acknowledge the impact of multimarginalized identities, as well as differences across various identities and experiences within TGD communities. In addition, they should utilize a TGD-affirming, culturally responsive approach to intervention and treatment.

Authors' Contributions

L.K. contributed to conceptualization, methodology, formal analysis, writing—original draft, and visualization. H.H. performed conceptualization and writing—original draft. D.A.S. contributed to conceptualization, methodology, supervision, writing—original draft. L.R.P contributed to validation and writing—reviewing and editing. I.K.M. performed conceptualization and writing—reviewing and editing. B.A.M. contributed to resources, writing—reviewing and editing, and project administration. S.K.K. provided conceptualization, resources, writing—reviewing and editing, and supervision,

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Abbreviations Used

LGB = lesbian, gay, or bisexual
MTHS = Michigan Transgender Health Survey
OR = odds ratio
PPR = prescription pain reliever
TGD = transgender and gender diverse